Neighborhood Income and Material Hardship in the United States

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Abstract

U.S. households face a number of economic challenges that affect their well-being. In this analysis we focus on the extent to which neighborhood economic conditions contribute to hardship. Specifically, using data from the 2008 and 2014 Survey of Income and Program Participation panel surveys and logistic regression, we analyze the extent to which neighborhoods income levels affect the likelihood of experiencing seven types of hardships, including trouble paying bills, medical need, food insecurity, housing hardship, ownership of basic consumer durables, neighborhood problems, and fear of crime. We find strong bivariate relationships between neighborhood income and all hardships, but for most hardships these are explained by other household characteristics, such as household income and education. However, neighborhood income retains a strong association with two hardships in particular even when controlling for a variety of other household characteristics: neighborhood conditions (such as the presence of trash and litter) and fear of crime. Our study highlights the importance of examining multiple measures when assessing well-being, and our findings are consistent with the notion that collective socialization and community-level structural features affect the likelihood that households experience deleterious neighborhood conditions and a fear of crime.

Keyword*:* material hardship, poverty, neighborhood income

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Many families still struggle to meet their basic needs despite rising living standards over the past several decades (Morduch & Schneider, 2017; Payne, 2017). Growing income inequality since the 1970s has been accompanied by a growth in the residential segregation by income; this has led to greater inequality in neighborhood conditions (Murray, 2012; Reardon & Bischoff, 2011). Neighborhoods are of considerable importance to individual well-being because people derive many amenities—such as good public schools and safe surroundings—from their areas of residence, and are also negatively affected when conditions are not so healthy, such as in the form of crime, low-functioning schools, and environmental hazards. In addition, neighborhoods are sites of social interaction, and as such provide cues for normative lifestyles and behavior, and are a source of social capital (Browning, Dietz, & Feinberg, 2004).

Local conditions therefore can affect experiences of poverty and, the focus of this analysis, *material hardship*. While the effects of neighborhood characteristics on income and poverty have received considerable attention, much less is known about their effects on material hardship. Unlike income, which is often considered to be instrumentally important for the goods and services it can purchase, material hardship measures are often considered indicators of economic well-being that are intrinsically important, as they measure things such as food security or ability to meet basic expenses, which reflect quality of life (Brady, 2003; Heflin, 2017; Iceland, 2013; Sen, 1999). Measures of material hardship are correlated with income and poverty, but only moderately so (Iceland & Bauman, 2007; Mayer & Jencks, 1993).

While living in low-income areas is typically thought to exacerbate individual poverty, the associations with hardship might not necessarily go in the same direction in all instances. Living in affluent areas likely raise the cost of basic goods (e.g., housing and health care), and

this might put more pressure on low- and middle-income families living in such areas. For example, as Barbara Ehrenreich (2001) observed, service workers in Key West either have to contend with very high housing costs that consume a high proportion of their salaries, or have to live very far away and have lengthy commutes. In addition, there is a relative aspect to poverty and hardship, as people often feel poor or are regarded as poor by others when they have less than those around them. According to this notion, then, if someone resides in a high-income area, this may increase the amount of money they feel they need to keep up with others, and this might increase hardship, relative to people with households with equal incomes but living in less affluent neighborhoods (Frank, 2013; Townsend, 1993). In other respects, however, we might expect level of neighborhood affluence to have the same effect on material hardship as on poverty; for example, the negative physical conditions of neighborhoods can affect well-being, such as through the presence of crime or the lack of supportive community institutions.

To investigate these issues we examine whether reports of material hardship vary by the income level of one's neighborhood, and also if these associations vary by the dimension of hardship considered, including food security, medical need, bill-paying hardship, housing hardship, neighborhood problems, fear of crime, and ownership of consumer durables. We might find, for example, that while living in more affluent neighborhoods is associated with fewer reports of neighborhood-related problems such as trash and litter, the opposite may be true (especially holding household income constant) for bill-paying hardship, where costs of goods may be higher in higher-income areas. In short, our study is guided by the following research questions:

1) What is the association between neighborhood income level and material hardship?
2) Does household income mediate or moderate this association?

3) How does the association between neighborhood income level and hardship vary by the dimension of material hardship being considered?

We address these questions using data from the 2008 and 2014 panels of the restricted-use version of the Survey of Income and Program (SIPP) where we can identify the neighborhood of residence. The 2008 panel has the advantage of having more hardship indicators than the 2014 panel, while the 2014 panel has the advantage of having place of residence and experiences of hardship measured in the same year (these methodological issues are described in more detail in the Data and Methods section below), as well as representing more recent information. With both panels, we document trends in hardship with descriptive analyses and then examine the association between neighborhood income and hardship with a series of logistic regression models. In doing so, we hope to gain a greater understanding of how experiences of material hardship are affected by where one resides.

Background

We begin this section with a discussion of measures of poverty and hardship and some of their individual- and household-level correlates. This is followed with a theoretical discussion of how neighborhoods can affect well-being, empirical studies on the subject, and finally our contributions to the literature and hypotheses.

There is growing interest in using multi-dimensional measures of well-being to complement more traditional income-based measures of poverty (Beverly, 2001; Heflin, Sandberg, & Rafail, 2009; Short, 2005). The United States has an official poverty measure that represents one such traditional measure. It was originally devised in the early 1960s by Social Security Administration researcher Mollie Orshanky, who was interested in measuring how

many people in the U.S. were struggling to meet basic needs. She defined basic needs by pricing out how much money it took to meet a low-cost food plan (as defined by the U.S. Department of Agriculture), and then multiplying this figure by three, as families at the time spent about one-third of their after-tax income on food during the course of a year (Fisher, 1997). She also varied the thresholds by family size and composition. According to this measure, families are poor if their total cash income falls below the poverty threshold for a family of the same type. Poverty thresholds are updated annually only for inflation. This measure was adopted as the official U.S. poverty measure by the late 1960s, and has changed little since.

While this has been a useful measure, it also has a number of flaws. For example, while families used to spend one third of their incomes on food, they now spend much less, as they spend relatively more on other items such as housing and health and child care. Also, the measure of income—total cash income during the previous year—may not accurately capture the resources families have at their disposal to meet basic needs, as some individuals have wealth upon which to draw. Conversely, some families might seem to have relatively high levels of income in the previous year, but they might have a crisis, such as health crisis or sudden loss of a job, that can result in considerable hardship (National Research Council, 1995).

In contrast to income, measures of material hardship are useful because they represent direct measures of well-being. Hardship measures are correlated with income poverty, but only moderately so, due to issues mentioned above, and to the fact that they tap into different dimensions of well-being (Heflin et al., 2009; Mayer & Jencks, 1993). There are different kinds of measures of material hardship too, and in this analysis we focus on 7 types: food security, medical need, bill-paying hardship, housing hardship, neighborhood problems, fear of crime, and ownership of consumer durables. These hardship measures are moderately correlated with each

other, as each can be affected by a variety of factors. For example, food security, medical need, and bill-paying hardship are more sensitive to short-term income shortfalls, such as those brought about by a sudden crisis, while neighborhood problems, fear of crime, and ownership of consumer durables are more strongly correlated with longer-term income flows (Iceland & Bauman, 2007). Among the latter, one may accumulate consumer durables (such as washers, dryers, and dishwashers) over a period of time, and thus such ownership often reflects income over a period of years, while a sudden drop of income can have an immediate impact on food security.

Unlike the official poverty measure, there is no single widely-accepted method for measuring material hardship. Such measures are only available in relatively small number of surveys, such as the Survey of Income and Program Participation (SIPP), used here. The SIPP, which consists of multiple panel surveys each lasting anywhere from three to five years, has a wide battery of hardship-related measures, and these were collected in a methodologically consistent manner beginning with the 1992 panel and extending to the 2008 panel. In 2014 the SIPP was redesigned and shortened, and the number of questions on hardships were significantly reduced.

Many of the standard individual- and household-level correlates of poverty apply to material hardship. For example, (Siebens, 2013) finds that households who were the most likely to report experiencing multiple hardships (such as difficulty meeting essential expenses, not paying rent or mortgage, getting evicted, not paying utilities, not seeing a doctor when needed, not always having enough food) are those which have lower incomes, lower levels of education, a single-parent, a member with a disability, are renters rather than homeowners, black or

Hispanic rather than white, and younger householders (Lerman & Zhang, 2014; Mayer & Jencks, 1989).

Neighborhoods effects and well-being

There are a number of broad theoretical approaches that help explain how and why neighborhood characteristics affect individual well-being, poverty, and children's development (Gephart, 1997; Jencks & Peterson, 1991). According to collective socialization, discussed by William Julius Wilson in his research on concentrated urban poverty (1987), adults serve as role models not only for their own children but others in the neighborhood as well. In high-poverty neighborhoods where there is a concentration of joblessness and single-parent families—which are a result of macroeconomic changes associated with deindustrialization and the suburbanization of the black middle class—there is an increase in social isolation and a shift in local social and cultural norms. The loss of role models leads to a breakdown of social control that provides boundaries for bad behavior and discipline needed to succeed in school and beyond, and this serves to yet further increase poverty.

Another approach highlights the importance of community-level structural features in affecting residents (Gephart, 1997; Sampson, 1992). These features can include the quality of public schools, the availability of health care, the existence of community organizations, and extensiveness of social networks, among other possible characteristics. People living in neighborhoods with strong institutions, community organizations, and social capital have greater resources at their disposal to find and connect to jobs and receive social support in times of need.

There are also models that instead posit that living among more affluent people does not always improve well-being. According to social comparison models (Jencks & Mayer, 1990),

those living among higher-income neighbors might respond in two ways—either to work harder to catch up or essentially to drop out of the competition. In other words, some might experience demoralization that leads to less effort and an increased likelihood of poverty. Similarly, the cultural conflict model posits that living among more affluent neighbors could lead to subcultures of resistance, especially if coupled with feelings that there are specific obstacles, including racism and discrimination, that prevent upward mobility (Gephart, 1997; Ogbu, 1991).

There are other ways in which one's income relative to those around them could affect well-being, even absent a demoralization/alienation effect. When considering subjective measures of well-being, (Easterlin, 2001) argues that happiness reported by individuals is affected by more than just the ability to meet basic material concerns. Rather, people's material aspirations are affected by the standard of living in the time and place in which they live, such that people who live in a time or place of greater affluence will have higher aspirations, and the ability to meet these aspirations is what is critical to attaining happiness and subjective well-being. If we extend this argument beyond happiness, we can conjecture that people who are trying to keep up with their neighbors may end up spending more than they can really afford, and this could eventually result in experiences of material hardship if they can no longer meet their expenses. As Frank (2013) has argued, people shape their spending patterns based on their reference group, which often consists of one's friends and neighbors. One of the lessons of the mortgage foreclosure crisis that sparked the Great Recession in 2007-2009 was that many families over-extended themselves by taking on risky debt to purchase houses they couldn't afford, aided and abetted by unscrupulous financial actors and institutions (Financial Crisis Inquiry Commission, 2011).

The empirical literature on these issues has generally supported the notion that living in lower income areas is associated with a number of negative outcomes for adolescents and adults. For example living in a poor neighborhood is associated with dropping out of school (Brooks-Gunn & Duncan, 1993; Crane, 1991) and crime (Peterson, Krivo, & Harris, 2000). One of the challenges in assessing the impact of neighborhood effects is that of selection: do certain areas attract poor people or do they make people poor? It can be difficult to assess this with cross-sectional data, but there have been experiments that suggest that neighborhoods matter, if sometimes the estimated effects are modest (Clampet-Lundquist & Massey, 2008; Kling, Ludwig, & Katz, 2005). And even while longitudinal data are better suited to making causal claims than cross-sectional data, the magnitude of the estimated effects using each in practice might not differ by all that much (Jackson & Mare, 2007).

Studies have also found a positive association between neighborhood income and subjective measures of wellbeing, including life satisfaction (Wang, Schwanen, & Mao, 2019) happiness (Firebaugh & Schroeder, 2009; Ludwig et al., 2012), antisocial behavior (Odgers et al., 2009), and mental health (Casciano & Massey, 2012; Kling et al., 2005). Research on the effects of neighborhood conditions on *material hardship* are very limited. One study that only tangentially examines this issues finds that within low-income neighborhoods, people living in those with lower levels of social cohesion are more likely to report three measures of material hardship (food security, housing security, and unmet medical need) (Brisson & Altschul, 2011), but, as noted, this study does not compare experiences among people living in neighborhoods with different income levels.

Our study is thus one of the first to systematically examine the link between neighborhood income level and material hardship, and we have the further advantage of having data on seven types of hardship. We have three hypotheses:

1) Households in neighborhoods with higher incomes will be less likely to report hardships, as the neighborhoods and house they live in will tend to have more amenities, social organization and capital, and fewer physical problems (e.g., trash, crime, plumbing problems).
2) Once we control for household income, the relationship between neighborhood income and material hardship might reverse for hardships related to meeting expenses, including bill-paying hardship, health hardship, and food hardship. The reason for the reversal is that expenses (e.g., housing costs) are higher in high-income neighborhoods, and people living in such neighborhoods may be more likely to over-extend themselves financially. In this scenario, household income *mediates* some of the relationship between neighborhood income and material hardship.
3) We expect to see a negative interaction effect between household and neighborhood income. That is, households with lower income incomes living in high-income neighborhoods will be especially more likely to report hardship related meeting expenses because they are struggling to keep up with their higher-income neighbors. In this scenario, household income *moderates* the relationship between neighborhood income and material hardship.

Data and Methods

We use restricted data from the 2008 and 2014 Survey of Income and Program Participation (SIPP) panels that include neighborhood-level identifiers for each household. Every

SIPP panel prior to 2014 fielded a topical module on Adult Well Being that included a number of questions on material hardships. From the 2008 SIPP panel we will use wave one data which include information on census tract of residence at the outset of the panel (the census tract of residence is not available in subsequent waves). We then also use one year's worth of data (three waves) leading up to and including the Adult Well-Being topical module administered in wave 6. We do this because some of the hardship questions have a one year reference period, and also to have a smoother indicator of household income over three waves than is afforded by using just one wave of data. Wave 6 of the 2008 panel yields data on material hardship for 2010. We link the wave 6 data to neighborhood-level data from the 5-year 2008-2012 American Community Survey (ACS) summary file.[1] Finally, we link the 2014 SIPP panel data—which includes reports on hardships in 2013—to neighborhood-level data from the 2011-2015 ACS.

Measures of Material Hardship

We use various measures of material hardship—measured at the household level—as our main dependent variables. Our measures of material hardship from the 2008 SIPP panel can be divided into several categories, as typically done in the literature (e.g., Heflin 2009, 2017; Iceland and Bauman 2007). These include: (1) Health hardship (one or more of the following): did not see a doctor/hospital, or dentist when needed care; (2) Food hardship (two or more of the following): food did not last; could not afford balanced meals; adult cut or skipped meals; adults eat less than they should; adults did not eat for a full day; (3) Bill-paying hardship (one or more): did not pay utility bill; utility disconnected; phone disconnected; did not pay rent/mortgage; (4) Housing hardship (one or more): pests, leaks, windows, plumbing, cracks, holes; (5) Consumer

[1] The 2008 panel also had a second Adult Well-Being Module in Wave 9, yielding data on hardship in 2011. The results for 2011 were very similar to those for 2010, so we focus on the 2010 data, when there is less sample attrition.

durables (five or more): computer, dishwasher, air conditioner, dryer, washer, microwave, telephone, refrigerator; (6) Neighborhood problems (two or more): noise, street repair, trash/litter, abandoned buildings, would like to move, smoke/odors; and (7) Fear of crime (two or more): nearby place afraid to walk, stay at home for fear, goes out with others, neighborhood is unsafe, carries something for protection, unsatisfied with crime, home is unsafe. We based the cutoffs to have relatively comparable dichotomous variables where levels of hardship are similar to levels of poverty.

The 2014 SIPP panel asked about a smaller set of material hardships than earlier panels. Specifically, for 2014, we have data on the following five hardships: (1) food hardship, which includes same items as above except no question on whether the person did not eat all day (2 or more); (2) bill-paying, which includes unable to pay rent/mortgage and unable to pay utility bills (one or more); (3) housing, which includes the same items as above except no item on roof leaks and broken windows (one or more); (4) Neighborhood problems, which includes street repair and trash/litter (one or more); and (5) Fear of crime, which includes neighborhood is unsafe, stay at home for fear (one or more). We emphasize that given the differences in the hardship items pre- and post- 2013 SIPP panel, we avoid making cross-year comparisons of the extent of hardship.

Main independent variables

Our main independent variables are: 1) the household income-to-poverty ratio with the following categories: under 1.0 of the poverty line; 1.0 to 1.99 of the poverty line; 2 to 4.99 of poverty line; 5.0 times or more of poverty line; (2) Median household income of neighborhoods. We will also interact median household income with the income-to-poverty ratio dummy variables. We also test the sensitivity of the results by using household income at the household level instead of income-to-poverty ratios, and these yielded similar result as shown. We define

neighborhoods at the census tract level. Census tracts typically have between 2,500 and 8,000 people, are defined with local input and are intended to represent neighborhoods.

Control variables

Our analyses includes the following individual and household level control variables: (1) age of householder; (2) race/ethnicity of householder: non-Hispanic white, non-Hispanic black, non-Hispanic Asian, non-Hispanic other, Hispanic; (3) education of householder: less than high school, high school, some college, BA+; (4) household type: married couple, single female with children, single male with children, nonfamily; (6) employment status of householder (employed full time, unemployed, employed part time, and out of the labor force); (7) number of people in household; (8) number children under 18; (9) household has person 65+ present; (10) disabled individual in household; (11) housing tenure; (12) lives in a nonmetro area; and region (Northeast, Midwest, South, West).

Estimation methodology

We begin with descriptive statistics of all of the variables in our models, by year. We then run crosstabulations of material hardships by our main independent variables of interest (we will recode neighborhood median income into quintiles). This is followed by fixed-effects logistic regression models that will take the form of:

$$\text{Logit}\,(\text{P}(\text{Y}=1)) = \text{B}_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 X_2 + \cdots + \beta_k X_k \qquad (1)$$

where the probability that a household experiences a hardship (Y) is a function of a series of covariates, including household income (X_1), median neighborhood income (X_2), the interaction between neighborhood and household income (X_1 X_2), and the other control variables specified

above. Hardships are measured at the household level, so we will only use one observation per household in all analyses.

We first examine the association between material hardship and neighborhood income level without controlling for household income, and then test if the relationship changes when household income is included (i.e., whether household income *mediates* the relationship between neighborhood income and material hardship), and finally, with an interaction effect between household income and neighborhood income (to test whether household income *moderates* the relationship between neighborhood income and material hardship) and all other control variables. We will run separate models for different hardships. Because our multivariate results for the 2008 and 2014 panels are similar, we focus our discussion using 2008, which has more hardship outcomes, but also include our 2014 multivariate results in an appendix. We also briefly describe the few differences in the results at the end of the Results section.

Results

Table 1 shows the prevalence of specific hardships, as well as our summary hardship indicators. As noted in the Data and Methods section, the measurement of hardships varies across panels, so they are in many cases not comparable. About 12.6 percent reported at least one health hardship and 11.3 reported two or more of the components of food hardship in 2010. The summary indicators vary from about 9 to 15 percent in 2010 and 2013. Note that the sample size in 2010 (32,000) is modestly larger than the sample in 2013 (29,000). These sample size numbers are rounded to meet U.S. Census Bureau disclosure rules (since we are using restricted data with neighborhood-level indicators).

(Table 1 here)

Table 2 shows how the prevalence of hardship varies by neighborhood income. Specifically, it indicates differences in the percentage reporting hardship for households living in neighborhoods which are in the bottom quintile of median neighborhood income, in the middle 3 quintiles, and finally in the top quintile. We find that for all hardships and both years, those living in neighborhoods in the bottom quintile of median income are considerable more likely to report hardships than those in the three middle quintiles, who are in turn more likely to report hardships than those in the top quintile. For example, in 2010, 17.0 percent of households in neighborhoods in the bottom quintile of median income reported a health hardship, compared to 12.8 percent of those in the middle quintiles and 7.7 of those in the top income quintile. The differences are even starker for hardships that are more directly linked to neighborhood conditions. For example, in 2013, 19.0 percent of those living in neighborhood in the bottom quintile of median income reported fear of crime, compared to just 2.8 percent of those in the top neighborhood income quintile. These results indicate that neighborhood income is highly negatively correlated with household-level hardships. Next, we employ multivariate analyses to examine the extent to which household income mediates and/or moderates these affects, while also controlling for a number of other household characteristics.

(Table 2 here)

Table 3 shows means for all of the independent variables in the analysis. Median neighborhood income (in 2013 dollars) was close to $50,000 in both years, and slightly higher in 2013 as the economy recovered from the Great Recession than in 2010. Median income-to-poverty ratio was about the same at 2.0. About 67 percent of householders were non-Hispanic white in 2013, down from 71 percent in 2010. Slightly less than a third of householders had a BA (with an increase from 2010 to 2013).

(Table 3 here)

Table 4 shows regression results by hardship in 2008. In models 1 and 2, we see that both median neighborhood income and household income-to-poverty ratio are statistically significant and negatively associated with all seven hardship. That is, the greater the median neighborhood income and the greater the household income-to-poverty ratio, the lower the odds that a household reports a hardship. This indicates that median neighborhood income exerts an impact on hardship above and beyond household income alone. However, the magnitude of the association between neighborhood income and hardship is reduced once household income is introduced. For example, in the bill-paying regressions, the odds ratio for median neighborhood income is 0.992 in model 2 vs. 0.982 in model 1. Furthermore, in models (model 3) where we add the rest of the household controls and neighborhood income*household income interaction terms, the median neighborhood income variable becomes nonsignificant in four of the seven hardship models. Further analysis, however, indicates that it is the inclusion of the interaction terms in particular that makes the first-order term become not significant, and not the introduction of all of the other controls. Household income-to-poverty ratio remains significant, though the magnitude of its association with hardship is reduced.

(Table 4 here)

The interaction terms between neighborhood income and household income are more often than not statistically significant, with a few exceptions. For health and bill hardship, a couple of the interactions are significant, and they indicate that at higher levels of household income, higher neighborhood income does more to decrease the likelihood of hardship than at lower income levels. Conversely, for low income households, higher neighborhood income does less to decrease the likelihood of hardship. This is consistent with the hypothesis that lower

income households in higher income areas might face hardships because they are spending more to meet other basic needs. We describe the magnitude of this effect below.

However, in one model for neighborhood hardship, the interaction term works in the opposite direction: at higher household income levels, higher neighborhood income does less to decrease the likelihood of hardship than at lower income levels. It is not clear why this might be the case, though one possibility is that higher-income household are more sensitive to neighborhood problems (e.g., litter and noise) than lower income households, and thus the effect of living in a higher-income neighborhood on the probability of reporting a neighborhood hardship is more muted among low-income households.

Figures 1 through 7 illustrate the magnitude of these effects—taking into account both the first-order ones and the interactions between household and neighborhood income. Specifically, these figures show predicted probabilities of reporting a hardship (for each of the seven hardships) by different percentiles of neighborhood median household income and household income-to-poverty ratios. These predicted probabilities are based on results in models 3 of Table 4, where we insert mean values for all of the control variables. A few patterns stand out. First, for Figures 1 through 3, which reflect hardships most associated with short-term income shortfalls—health hardship, food hardship, and bill-paying hardship—the effects of household income are large, while the effects of median neighborhood income are substantively not significant. For example, in Figure 1 for health hardship, the probability that a household with an income below the poverty line (i.e., below 1.0 in terms of household income-to-poverty ratio) reports that hardship is about 0.16, regardless of neighborhood income level. The probability that a household with an income of 5 times or more of the poverty line reports such a hardship is considerably lower, at 0.05, again regardless of median neighborhood income level.

To the extent that interaction terms are statistically significant, their effects are much small than the overall household income effect. Nevertheless, as noted in the discussion of the interaction effects above, we do see that poor households are slightly more likely to report health and bill-paying hardships in higher-income areas, while affluent households (income-to-poverty threshold of 5.0+) are slightly less likely to report hardships in high-income areas.

(Figures 1-7 here)

The housing hardship outcome (Figure 5), which is often thought to be affected by longer-term income flows, shows a similar pattern as we see for health, food, and bill-paying hardship. However, we see a small difference for lack of consumer durables (Figure 4), where those living in high-income neighborhoods are less likely to report a lack of consumer durables than those in low-income neighborhoods (these differences were statistically significant in Table 4). Further analysis (not shown) indicated that those living in higher-income neighborhoods have consumer durables that come with their housing in higher-income areas, such as dishwashers and washers and dryers. The interaction between household and neighborhood income was statistically not significant for this outcome in Table 4.

The most dramatic differences are in Figures 6 and 7, which show results for neighborhood hardship and fear of crime, respectively. These are hardships where we might expect the strongest association between neighborhood income and the likelihood of hardship, and the results bear this out. In fact, for neighborhood hardship, household income-to-poverty ratio hardly registers at all. Instead, differences in hardship by neighborhood income predominate. For example, among poor households (those with income-to-poverty ratios under 1.0), the probability of a neighborhood hardship is about 0.13 for those who live in a neighborhood with a median income at the 30th percentile. In contrast, the predicted probability

of a hardship is much lower at 0.06 for the similar households living in neighborhoods at the 80th percentile of median income. For high-income households (5.0+ of the poverty line), the predicted probability for experiencing a neighborhood hardship in neighborhoods at the 30th percentile of median income is virtually the same (also 0.13) as a poor household living in such a neighborhood. As was noted in the discussion of Table 4, there is one statistically significant interaction effect, though on the whole the magnitude of the effect is modest. Specifically, the probability of reporting a neighborhood hardship is slightly lower among low income households living in a high income area than a high income household living in the same area. One possible explanation is that high income households might be more sensitive to negative neighborhood conditions (because of their own high income) than higher-income households in similar neighborhoods.

As with neighborhood hardship, differences in fear of crime vary considerably by neighborhood income level. For example, among poor households, the probability of reporting a fear of crime among those living in neighborhoods at the 30th percentile of median neighborhood income is 0.18, compared to just under 0.10 for those living in neighborhoods at the 80th percentile of median income. The interaction between neighborhood and household income is not significant.

The results using the 2014 SIPP panel are similar, and thus are included in Appendix Table A1 and Appendix Figures A1-A7. For the short-term hardships measured in 2013, bill and food hardship, median neighborhood income is statistically significant until Model 3, where it is no longer significant (as in 2010), though again it was the inclusion of the interaction terms that make the first-order terms not significant. The interaction terms between household and neighborhood income are statistically significant in one of these (food hardship) but not in the

other (bill hardship), and in the same direction as for 2010. The effects of neighborhood income in 2013 remain statistically significant in model 3 for neighborhood hardship and fear of crime, as they were in 2010 panel, though none of the interaction effects are statistically significant.

The main difference between results from the 2010 and 2013 is that the effect of median income remains statistically significant for the housing hardship outcome in 2013, though it was not so in 2010. This suggests that the housing stock in high-income areas might have fewer problems than those in lower income areas. So, for example, poor renters moving into higher-income areas might encounter fewer housing problems than those moving into lower-income areas. However, because this finding is statistically significant in 2013 and not in 2010, we view this finding with caution.

Conclusion

Many Americans experience a number of hardships that negatively impact their well-being. In this paper we focus on the extent to which neighborhood economic conditions contribute to hardship. Using restricted data from the 2008 and 2014 Survey of Income and Program Participation panels (with data on hardship in 2010 and 2013, respectively) that include identifiers of the neighborhoods in which respondents reside, we examine the association between neighborhood median household income and reports of seven types of hardship, including food sufficiency, health hardship, bill-paying hardship, ownership of consumer durables, housing hardship, neighborhood problems, and fear of crime. We further investigate if the association between neighborhood conditions and hardship is explained (i.e., mediated) by household income, or if the effect of such conditions varies (moderated) by household income.

We find that there is a strong bivariate association between neighborhood income and hardship, with households living in high-income areas less likely to report such hardships. The magnitude of the association remains, but is reduced, when we control for household income, suggesting that hardships are not wholly explained by such income. In final models where we control for many additional household characteristics (e.g., education, labor force status, household structure) and include neighborhood income*household income interaction terms, the association between neighborhood income and four of the seven hardships in 2010 become statistically not significant (mainly due to the inclusion of the interaction terms), as well substantively not significant, as illustrated when we show predicted probabilities for various hardships. The four hardships include three that typically are associated with short-term income flows—bill-paying, health, and food hardship—as well as housing hardship. When conducting these analyses with the 2014 SIPP panel data, the association between neighborhood income and housing hardship remains statistically significant, suggesting that housing hardship may be more likely in low-income areas. Because neighborhood income is significant in one panel but not the other, this particular finding should be viewed with caution. In any case, with the three short-term hardships in particular, the effect of household income greatly exceeds that of neighborhood income. With regards to lack of consumer durables, neighborhood income has a negative association, but the magnitude of the effect is moderate.

In contrast, neighborhood income is strongly associated with the last two hardships—neighborhood problems and fear of crime. These associations remain significant and substantively large even when controlling for a number of other household characteristics. The effect of neighborhood income is also considerably larger than the effect of household income.

With regards to the question of whether household income may moderate the effect of neighborhood income, we find small effects for a few hardships. For some of the short-term hardships (health and bill-paying in 2010 and food hardship in 2013), a few of the household*neighborhood income interaction terms are statistically significant, suggesting that low-income household are modestly more likely to experience such hardships in higher-income areas than low-income ones, suggesting that they may be struggling to meet other household needs, such as housing expenses, in such areas. In just one of the long-term hardship outcomes—neighborhood hardship in 2010—we see the interaction effect go in the other direction, where higher-income households are more likely to report a neighborhood hardship in a high-income area than a low-income households. We speculate that higher-income households could be more sensitive to neighborhood problems than lower-income ones, though again the effect is modest and significant in the 2010 but not in 2013.

Overall, our findings suggest that neighborhood economic conditions have relatively little effect on the experience of hardships that reflect short-term shortfall in income, including bill-paying, food, and health hardship, especially once we control for a variety of household characteristics. The effect of household income greatly exceeds that of neighborhood income. However, neighborhood income has a substantial effect on hardships that we would think would be most directly affected by neighborhood conditions—neighborhood problems (such as noise problems, street repair problems, abandoned buildings, and trash/litter), and fear of crime. With these outcomes, neighborhood income is considerably more important than household income.

Our results provide some support for theories that highlight the importance of collective socialization (Wilson, 1987) and community-level structural features in affecting residents (Gephart, 1997; Sampson, 1992). The fact that fear of crime is strongly associated with

neighborhood income provides support for the first of these, which highlights how in higher-poverty neighborhoods there is an increase in social isolation and breakdown of social control. That neighborhood problems are more common in lower-income areas provides support for the second, which posits that higher-income areas might have more resources at their disposal—ranging from financial resources to social capital and other community organizations—that can help reduce the number of deleterious neighborhood problems. The small moderating effect of income in a few models provides modest support for models highlighting the importance of social comparison in well-being (Easterlin, 2001; Frank, 2013). Low-income households living in higher-income areas are slightly more likely to report some hardships, perhaps because they are spending a higher proportion of their incomes to live in these neighborhoods with presumably more amenities.

Our study contributes to our knowledge of material hardship and well-being in several ways. First, our study affirms that neighborhood conditions can affect well-being (Brooks-Gunn & Duncan, 1993; Casciano & Massey, 2012; Clampet-Lundquist & Massey, 2008; Firebaugh & Schroeder, 2009; Kling et al., 2005). Critically, our study suggests that neighborhood income affects some hardship outcomes more than others. As might be expected, they have the greatest impact on hardships that directly measure neighborhood conditions, such as street repair problems, trash and litter, abandoned buildings, and the likelihood that the household would like to move from their current residence. It also strongly relates to fear of crime, such as being afraid to walk alone at night and the feeling that the neighborhood is unsafe. For other hardships more directly related to short-term income fluctuations, however, household income itself is much more important than the characteristics of one's neighborhood.

Thus, our study highlights the importance of investigating multiple outcome measures that tap into different dimensions of well-being. So while basic income or poverty measures may be informative, they remain narrow measures of how people are faring. For this reason, a number of researchers and commentators have called for consideration of additional measures of well-being, including hardship measures, which tap into problems of intrinsic importance, such as lack of food and poor housing and neighborhood conditions (Beverly, 2001; C. Heflin et al., 2009; Mayer & Jencks, 1989).

The growth in residential segregation by income has led to increasing inequality in neighborhood environments (Reardon & Bischoff, 2011). Our findings suggest that this trend will exacerbate differences in some important dimensions of well-being, such as problems in the physical conditions in neighborhoods and fear of maintaining physical safety. These problems may be mitigated if overall standards of living increase or if crime itself declines, as it has for several decades. However, the slowing of economic growth and the recent coronavirus-induced economic recession could serve to reduce living standards, at least in the short-run. Likewise, there is no guarantee that declines in crime will continue indefinitely, as indicated in recent trends in some neighborhoods in some cities. These and related structural conditions will continue to play an important role in shaping the well-being of individuals and their families across the United States.

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Table 1. Percentage Reporting Material Hardships, 2010 and 2013		
	2010	2013
Health hardship (one or more)	**12.6**	
Did not see a dentist	9.8	
Did not see a doctor	8.1	
Food hardship (two or more)	**11.3**	**12.8**
Food did not last	13.8	14.7
Did not eat balanced meals	12.5	13.0
Skipped meals	5.3	8.2
Ate less than should	5.6	8.1
Did not eat whole day	1.5	
Bill-paying hardship (one or more)	**15.0**	**12.4**
Did not pay utility bill	10.8	10.1
Phone disconnected	3.7	
Did not pay mortgage/rent	8.0	7.3
Housing hardship (one or more)	**14.8**	**16.7**
Insect, pest problems	7.9	9.5
Roof leak	5.2	
Broken windows	3.0	
Plumbing problems	2.0	6.0
Cracks in wall	2.8	7.0
Holes in floor	0.7	1.4
Lack of consumer durables (five or more)	**13.9**	
Computer	26.1	
Dishwasher	32.8	
Air conditioner	12.1	
Dryer	17.8	
Washer	15.5	
Microwave	3.1	
Cell phone	13.6	
Telephone	25.0	
Refrigerator	0.7	
color tv	1.6	
VCR/DVD	8.3	
Stove	1.4	
Food Freezer	62.2	
Neighborhood problems (2+ in 2010, 1+ in 2013)	**11.4**	**16.9**
Noise problems	14.0	13.5
Street repair problems	12.6	
Trash, litter	6.2	7.5
Abandoned buildings	7.4	
Would like to move	4.9	
Smoke, odors	3.0	
Fear of crime (2+ in 2010, 1+ in 2013)	**15.0**	**8.7**
Afraid to walk alone at night	21.1	
Stay at home for fear	10.8	5.5
Goes out with others	8.9	
Neighborhood is unsafe	7.5	5.6
Carries something for protection	6.4	
Would like to move due to crime	4.3	
Home is unsafe	3.2	
N	32,000	29,000
Sources: 2008 and 2014 SIPP panels		

Table 2. Neighborhood Household Income, 2010 and 2013

	2010	2013
Health hardship		
Neighborhood income < 20 percentile	17.0	
Neighborhood income ge 20 and le 80 percentile	12.8	
Neighborhood income > 80 percentile	7.7	
Food hardship		
Neighborhood income < 20 percentile	16.8	22.8
Neighborhood income ge 20 and le 80 percentile	11.2	12.3
Neighborhood income > 80 percentile	6.0	4.5
Bill-paying hardship		
Neighborhood income < 20 percentile	21.8	19.3
Neighborhood income ge 20 and le 80 percentile	15.0	12.2
Neighborhood income > 80 percentile	8.1	6.1
Housing hardship		
Neighborhood income < 20 percentile	19.6	24.5
Neighborhood income ge 20 and le 80 percentile	14.2	16.1
Neighborhood income > 80 percentile	11.7	10.5
Lack of consumer durables		
Neighborhood income < 20 percentile	24.9	
Neighborhood income ge 20 and le 80 percentile	12.6	
Neighborhood income > 80 percentile	6.6	
Neighborhood problems		
Neighborhood income < 20 percentile	20.5	28.3
Neighborhood income ge 20 and le 80 percentile	10.5	15.8
Neighborhood income > 80 percentile	5.4	9.0
Fear of crime		
Neighborhood income < 20 percentile	26.4	19.0
Neighborhood income ge 20 and le 80 percentile	13.8	7.3
Neighborhood income > 80 percentile	7.2	2.8

Sources: 2008 and 2014 SIPP panels

Table 3. Descriptive Statistics, 2010 and 2013

	2010	2013
Median neighborhood income ($2013)	48,450	52,530
Household income-to-poverty ratio (median)	2.0	2.0
Age	51.1	51.1
Race		
Non-Hispanic white	70.6	67.4
Non-Hispanic black	12.0	12.8
Non-Hispanic Asian	3.0	4.7
Other Race	2.6	2.1
Hispanic	11.8	13.0
Education		
Less than high school	11.4	11.0
High school	24.7	27.2
Some college	34.9	29.2
BA+	29.0	32.6
Home owner	65.3	62.5
Household structure		
Other household	38.7	39.2
Married couple household	48.0	47.8
Female-headed household	13.3	13.1
Labor force status		
Unemployed	4.6	3.5
Full-time employed	48.3	48.1
Part-time employed	13.4	13.9
Out of labor force	33.7	34.4
Household size	2.5	2.3
Children under 18 present	29.0	31.6
Person over 65 present	22.8	28.6
Disabled person present	13.6	23.4
Non metro area	17.6	14.0
Region		
West	21.9	22.4
Midwest	22.6	22.2
Northeast	19.2	18.4
South	36.3	37.1

Sources: 2008 and 2014 SIPP panels. Note: age, race, education, and labor force status refer to the characteristics of the householder.

Table 4. Logistic Regressions Predicting Hardships, 2008 (Odds ratios)

	Health Hardship									Bill Hardship									Food Hardship								
	Model 1			Model 2			Model 3			Model 1			Model 2			Model 3			Model 1			Model 2			Model 3		
Median neighborhood income (1000s)	0.986	0.001	***	0.994	0.001	***	1.003	0.002		0.982	0.001	***	0.992	0.001	***	1.002	0.002		0.982	0.001	***	0.992	0.001	***	1.000	0.003	
Household Income-to-poverty ratio																											
<1.0 (omitted)																											
>=1.0 & <2.0				0.844	0.046	**	1.290	0.183					0.635	0.032	***	0.903	0.125					0.674	0.039	***	0.935	0.147	
>=2.0 & <5.0				0.471	0.025	***	0.908	0.127					0.323	0.032	***	0.753	0.103	*				0.319	0.018	***	0.686	0.108	*
>=5.0				0.196	0.015	***	0.410	0.080	***				0.116	0.009	***	0.269	0.055	***				0.123	0.011	***	0.332	0.068	***
Neighborhood inc*HH inc interaction																											
<1.0 (omitted)																											
>=1.0 & <2.0							0.994	0.003								0.998	0.003								0.998	0.004	
>=2.0 & <5.0							0.992	0.003	**							0.992	0.003	**							0.996	0.003	
>=5.0							0.993	0.003	*							0.996	0.003								0.997	0.003	
All control variables[1]							X									X									X		
N	32,000			32,000			32,000			32,000			32,000			32,000			32,000			32,000			32,000		

***p<.001 **p<.01 *p<.05

[1] Control variables include age, race and Hispanic origin, education, household structure, employment status, household size, number of children, disabled person in household, elderly person in household, homeowner, metropolitan status, and region.

Table 4. Logistic Regressions Predicting Hardships, 2008 (Continued)

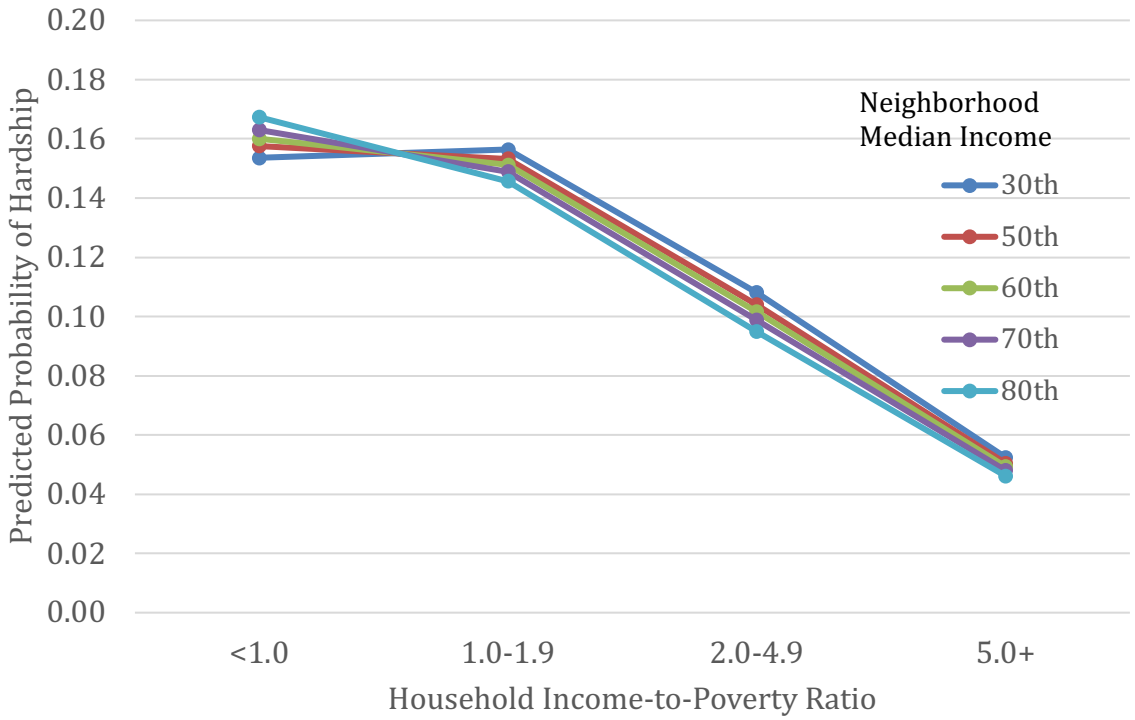
	Housing Hardship									Consumer Durable Hardship									
	Model 1			Model 2			Model 3			Model 1			Model 2			Model 3			
Median neighborhood income	0.991	0.001	***	0.995	0.001	***	0.999	0.003		0.974	0.001	***	0.986	0.001	***	0.989	0.003	***	
Household Income-to-poverty ratio																			
<1.0 (omitted)																			
>=1.0 & <2.0				0.860	0.048	*	1.217	0.185					0.645	0.032	***	0.641	0.098	**	
>=2.0 & <5.0				0.557	0.029	***	0.935	0.140					0.245	0.012	***	0.420	0.064	***	
>=5.0				0.453	0.028	***	0.567	0.096	**				0.094	0.008	***	0.198	0.049	***	
Neighborhood inc*HH inc interaction																			
<1.0 (omitted)																			
>=1.0 & <2.0							0.996	0.003								1.004	0.003		
>=2.0 & <5.0							0.995	0.003								1.002	0.003		
>=5.0							1.001	0.003								1.006	0.004		
All control variables[1]								x									x		
N	32,000			32,000			32,000			32,000			32,000			32,000			

	Neighborhood Hardship									Fear of Crime Hardship									
	Model 1			Model 2			Model 3			Model 1			Model 2			Model 3			
Median neighborhood income	0.975	0.001	***	0.977	0.001	***	0.973	0.004	***	0.975	0.001	***	0.979	0.001	***	0.977	0.003	***	
Household Income-to-poverty ratio																			
<1.0 (omitted)																			
>=1.0 & <2.0				0.823	0.051	**	1.048	0.193					0.832	0.044	**	0.874	0.137		
>=2.0 & <5.0				0.679	0.038	***	0.781	0.134					0.602	0.030	***	0.772	0.114		
>=5.0				0.684	0.047	***	0.630	0.130	*				0.485	0.031	***	0.600	0.112	**	
Neighborhood inc*HH inc interaction																			
<1.0 (omitted)																			
>=1.0 & <2.0							0.999	0.005								1.003	0.004		
>=2.0 & <5.0							1.004	0.004								1.003	0.004		
>=5.0							1.010	0.004	*							1.006	0.004		
All control variables[1]								x									x		
N	32,000			32,000			32,000			32,000			32,000			32,000			

***p<.001 **p<.01 *p<.05

[1] Control variables include age, race and Hispanic origin, education, household structure, employment status, household size, number of children, disabled person in household, elderly person in household, homeowner, metropolitan status, and

Figure 1. Predicted Probability of Health Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2010



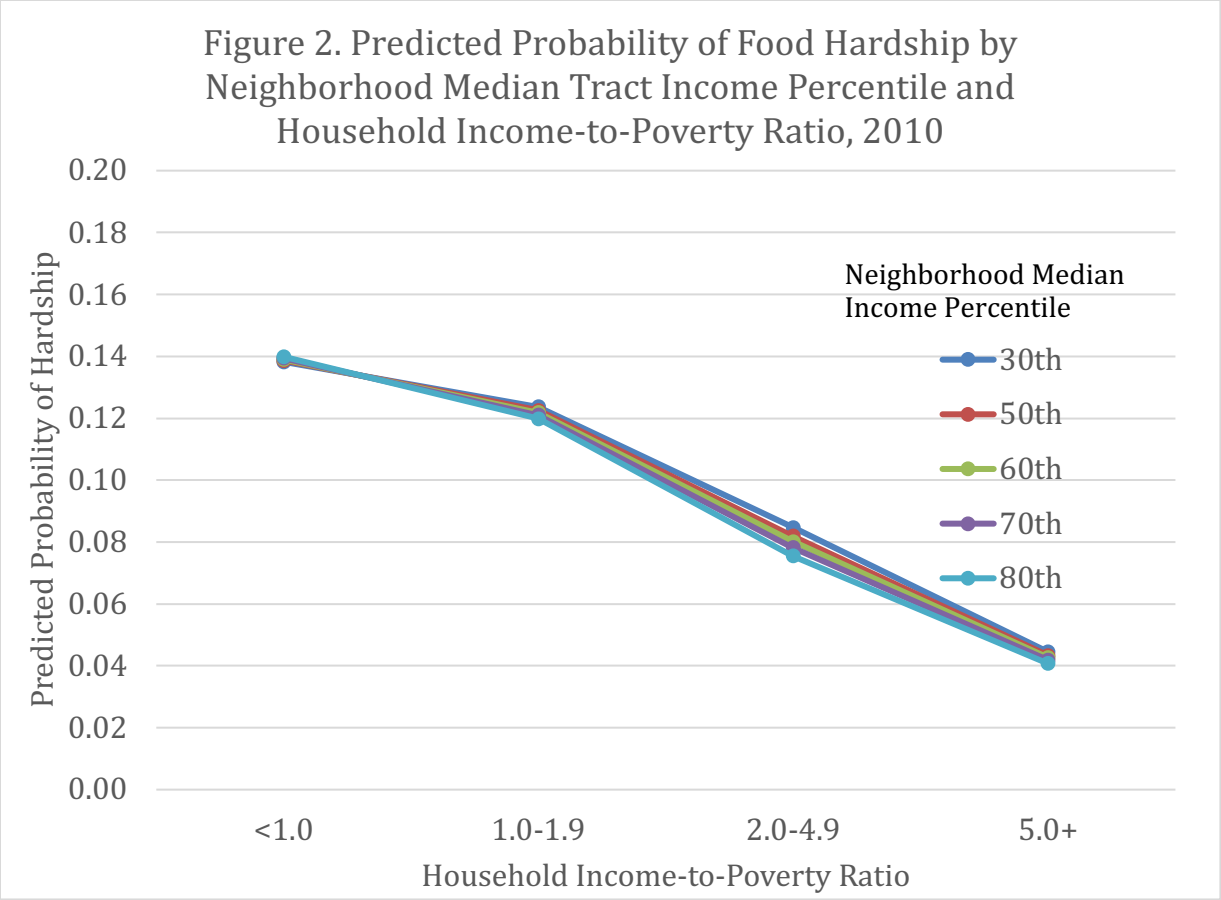


Figure 2. Predicted Probability of Food Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2010
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Predicted Probability of Hardship
Neighborhood Median Income Percentile
30th
50th
60th
70th
80th
<1.0
1.0-1.9
2.0-4.9
5.0+
Household Income-to-Poverty Ratio

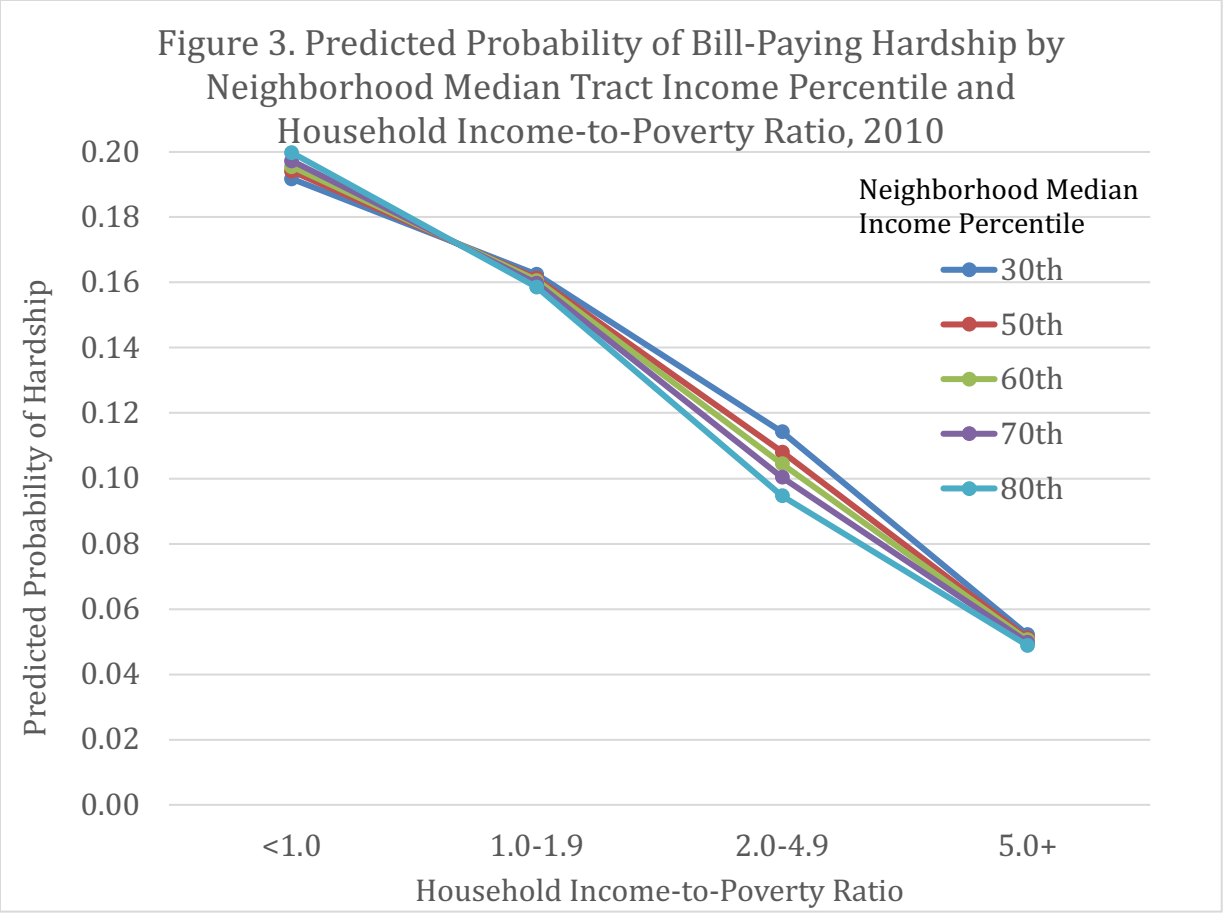


Figure 3. Predicted Probability of Bill-Paying Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2010
Predicted Probability of Hardship
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
<1.0
1.0-1.9
2.0-4.9
5.0+
Household Income-to-Poverty Ratio
Neighborhood Median Income Percentile
30th
50th
60th
70th
80th

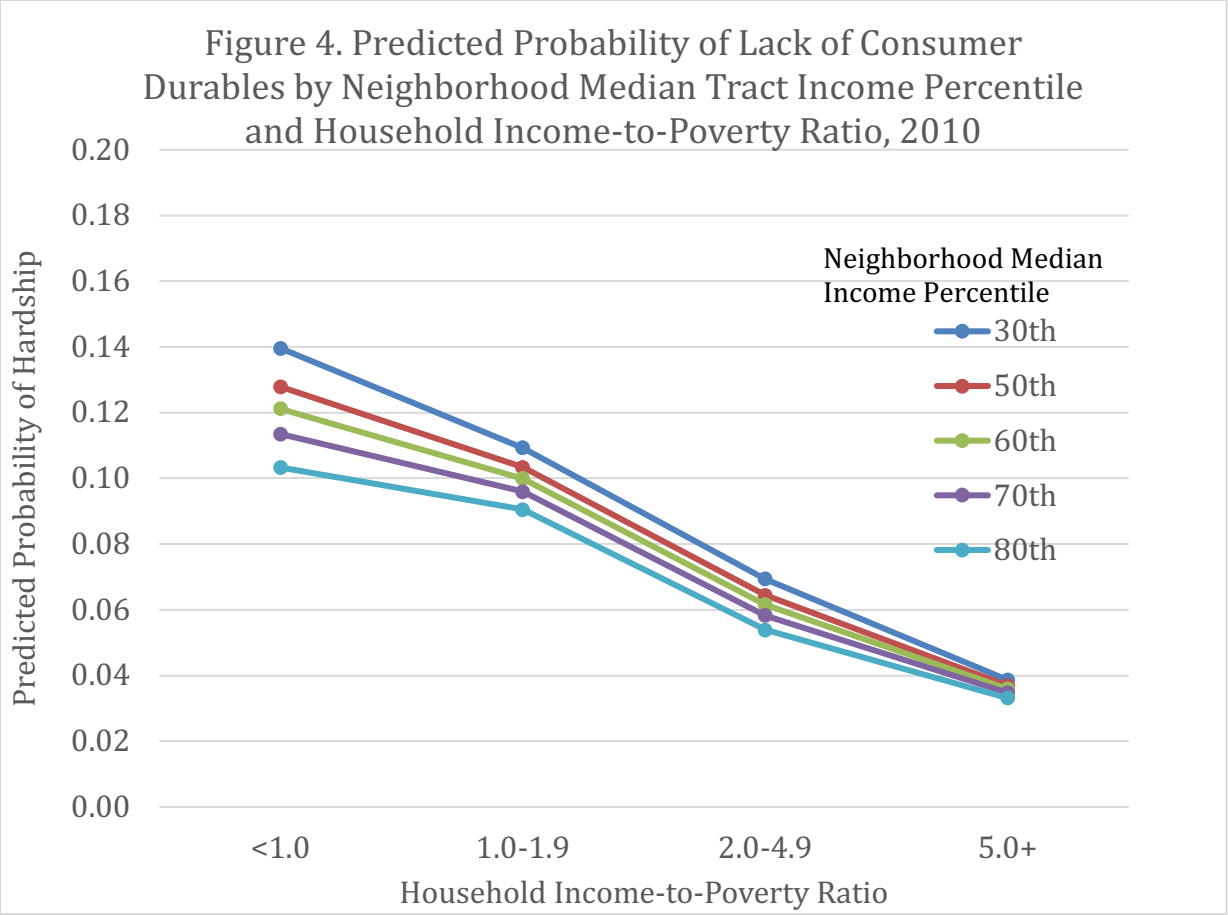


Figure 4. Predicted Probability of Lack of Consumer Durables by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2010
Predicted Probability of Hardship
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Neighborhood Median Income Percentile
30th
50th
60th
70th
80th
<1.0
1.0-1.9
2.0-4.9
5.0+
Household Income-to-Poverty Ratio

Figure 5. Predicted Probability of Housing Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2010

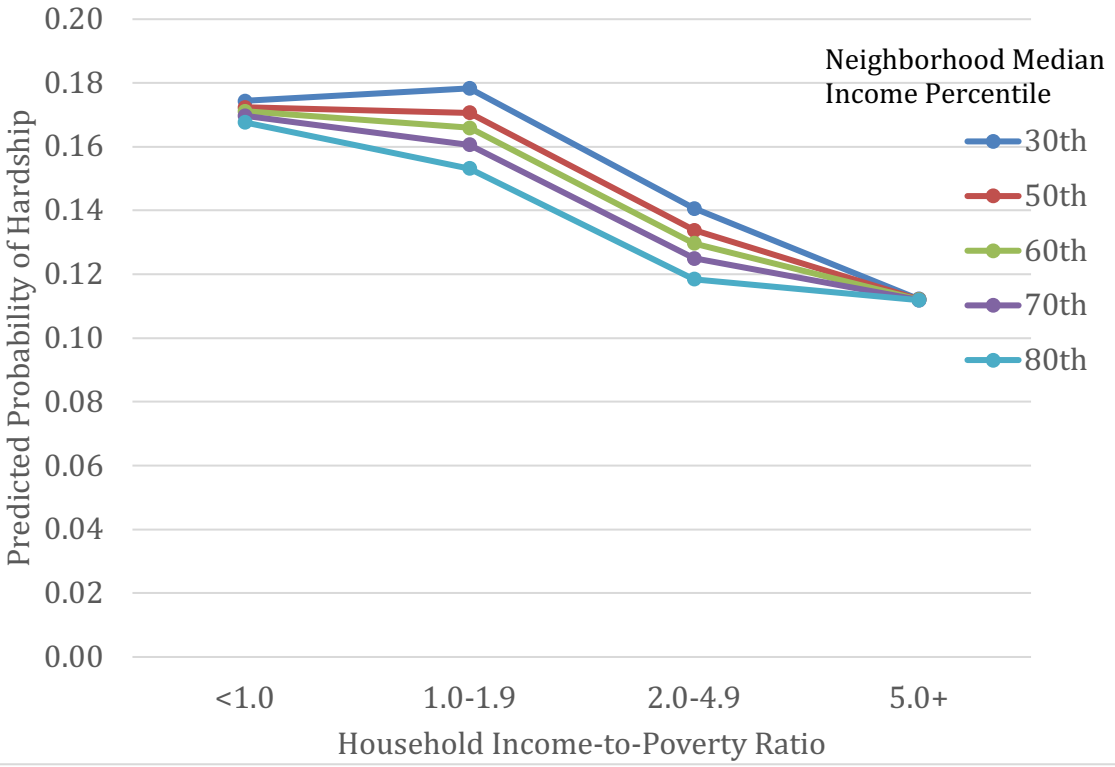
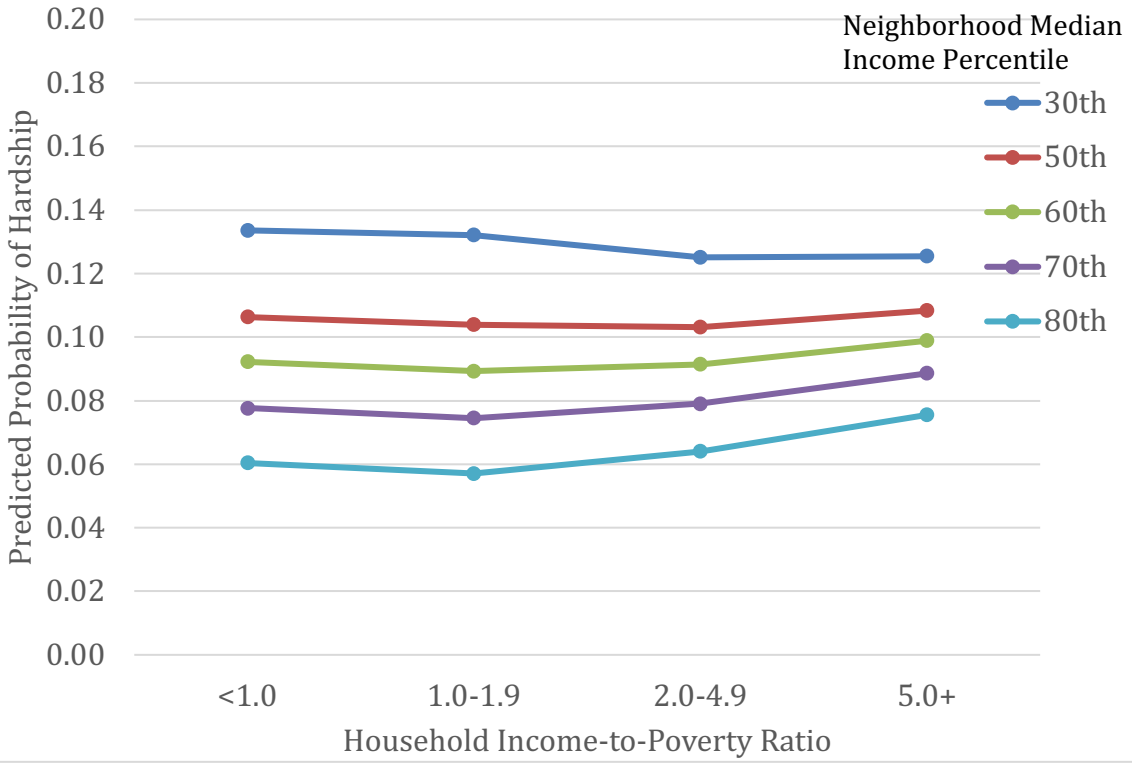


Figure 6. Predicted Probability of Neighborhood Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2010



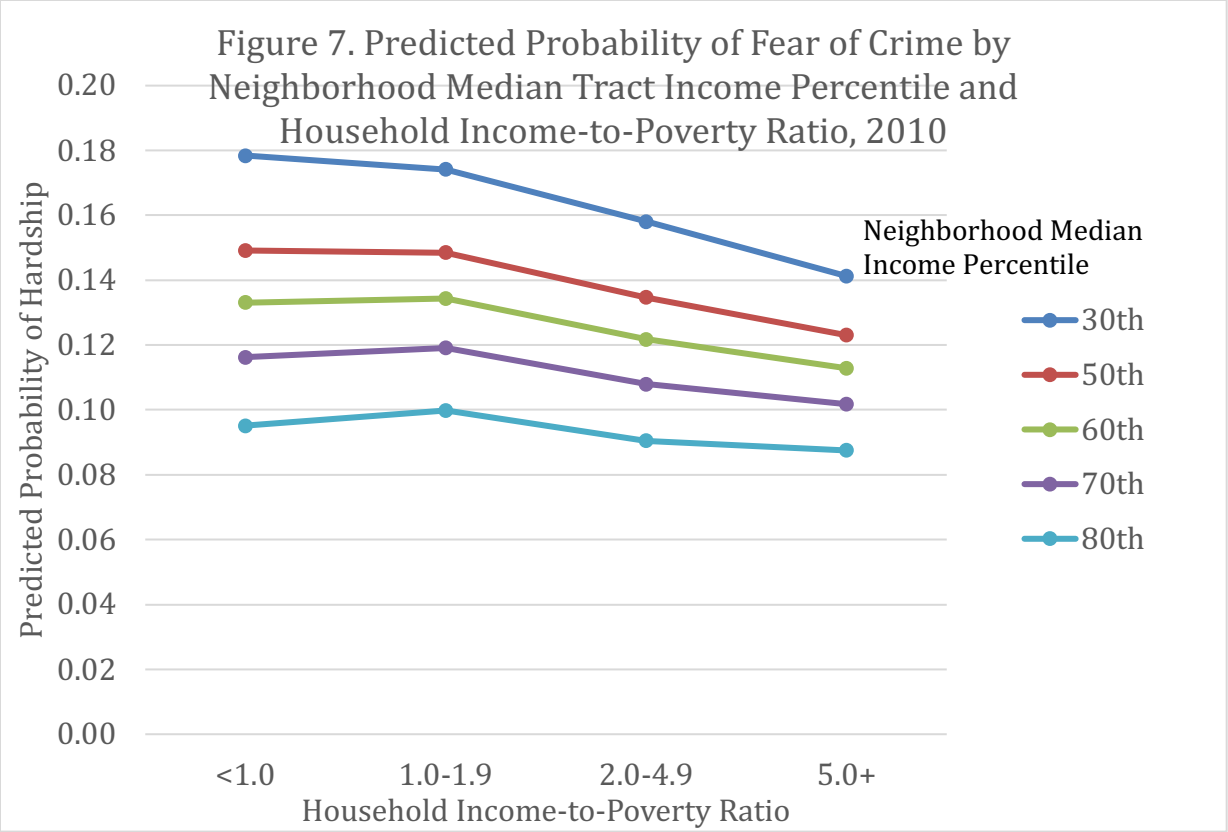


Figure 7. Predicted Probability of Fear of Crime by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2010
Predicted Probability of Hardship
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
<1.0
1.0-1.9
2.0-4.9
5.0+
Household Income-to-Poverty Ratio
Neighborhood Median Income Percentile
30th
50th
60th
70th
80th

Table A1. Logistic Regressions Predicting Hardships, 2013 (Odds ratios)

	Bill Hardship									Food Hardship								
	Model 1			Model 2			Model 3			Model 1			Model 2			Model 3		
Median neighborhood income (1000s)	0.983	0.001	***	0.992	0.001	***	0.998	0.002		0.975	0.001	***	0.987	0.001	***	0.998	0.002	
Household Income-to-poverty ratio																		
<1.0 (omitted)																		
>=1.0 & <2.0				0.783	0.043	***	1.010	0.141					0.760	0.039	***	1.158	0.149	
>=2.0 & <5.0				0.420	0.022	***	0.700	0.096	**				0.271	0.014	***	0.665	0.095	**
>=5.0				0.169	0.014	***	0.409	0.095	***				0.073	0.007	***	0.348	0.080	***
Neighborhood inc*HH inc interaction																		
<1.0 (omitted)																		
>=1.0 & <2.0							0.999	0.003								0.997	0.003	
>=2.0 & <5.0							0.998	0.003								0.993	0.003	*
>=5.0							0.996	0.004								0.988	0.004	**
All control variables[1]							X									X		
N		29,000			29,000			29,000			29,000			29,000			29,000	
***p<.001 **p<.01 *p<.05																		

[1]Control variables include age, race and Hispanic origin, education, household structure, employment status, household size, number of children, disabled person in household, elderly person in household, homeowner, metropolitan status, and region.

Table A1. Logistic Regressions Predicting Hardships, 2013 (Continued)

	Housing Hardship									Neighborhood Hardship										Fear of Crime Hardship								
	Model 1			Model 2			Model 3			Model 1			Model 2			Model 3				Model 1			Model 2			Model 3		
Median neighborhood income	0.987	0.001	***	0.992	0.001	***	0.994	0.002	*	0.981	0.001	***	0.983	0.001	***	0.986	0.003	***		0.968	0.002	***	0.973	0.002	***	0.977	0.003	***
Household Income-to-poverty ratio																												
<1.0 (omitted)																												
>=1.0 & <2.0				0.800	0.042	***	1.197	0.168					0.862	0.046	*	1.026	0.158						0.701	0.045	***	1.137	0.191		
>=2.0 & <5.0				0.587	0.029	***	0.963	0.126					0.727	0.036	***	1.292	0.184						0.519	0.032	***	0.918	0.155		
>=5.0				0.414	0.025	***	0.525	0.086	***				0.583	0.035	***	0.810	0.142						0.412	0.033	***	0.782	0.197		
Neighborhood inc*HH inc interaction																												
<1.0 (omitted)																												
>=1.0 & <2.0							0.995	0.003								0.999	0.004									0.994	0.004	
>=2.0 & <5.0							0.998	0.003								0.995	0.003									0.998	0.004	
>=5.0							1.004	0.003								1.001	0.003									0.999	0.005	
N		29,000			29,000			29,000			29,000			29,000			29,000				29,000			29,000			29,000	

***p<.001 **p<.01 *p<.05

[1]Control variables include age, race and Hispanic origin, education, household structure, employment status, household size, number of children, disabled person in household, elderly person in household, homeowner, metropolitan status, and region.

Figure A1. Predicted Probability of Food Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2013

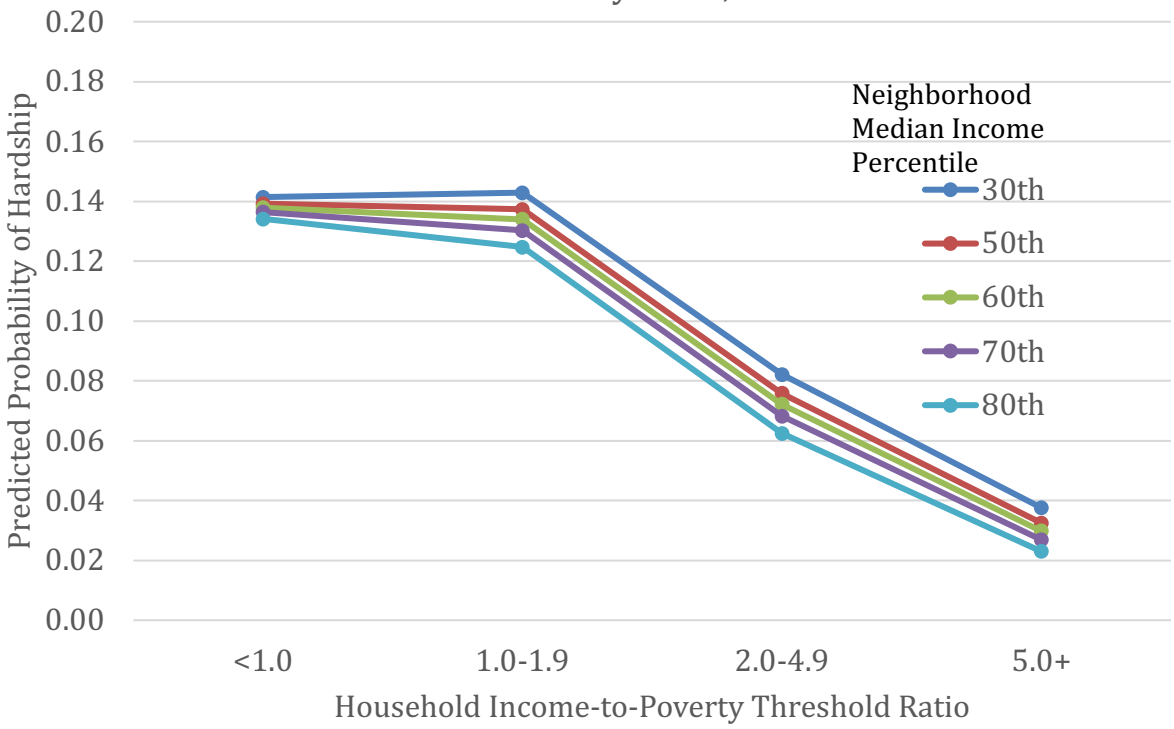
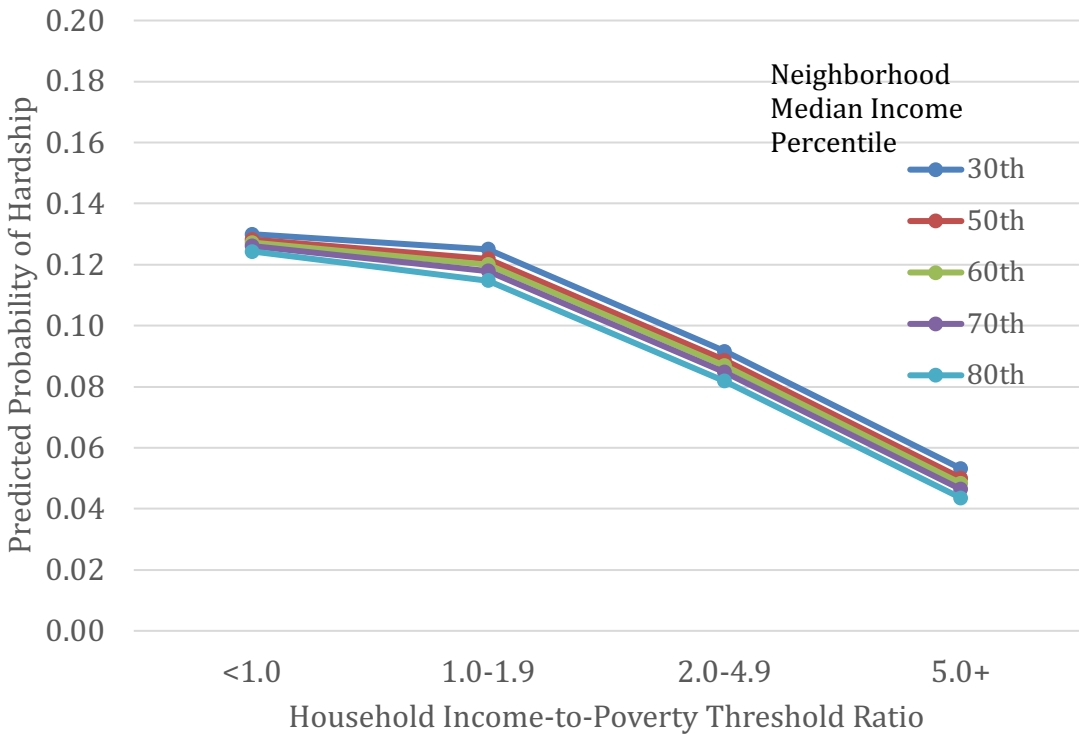


Figure A2. Predicted Probability of Bill-Paying Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2013



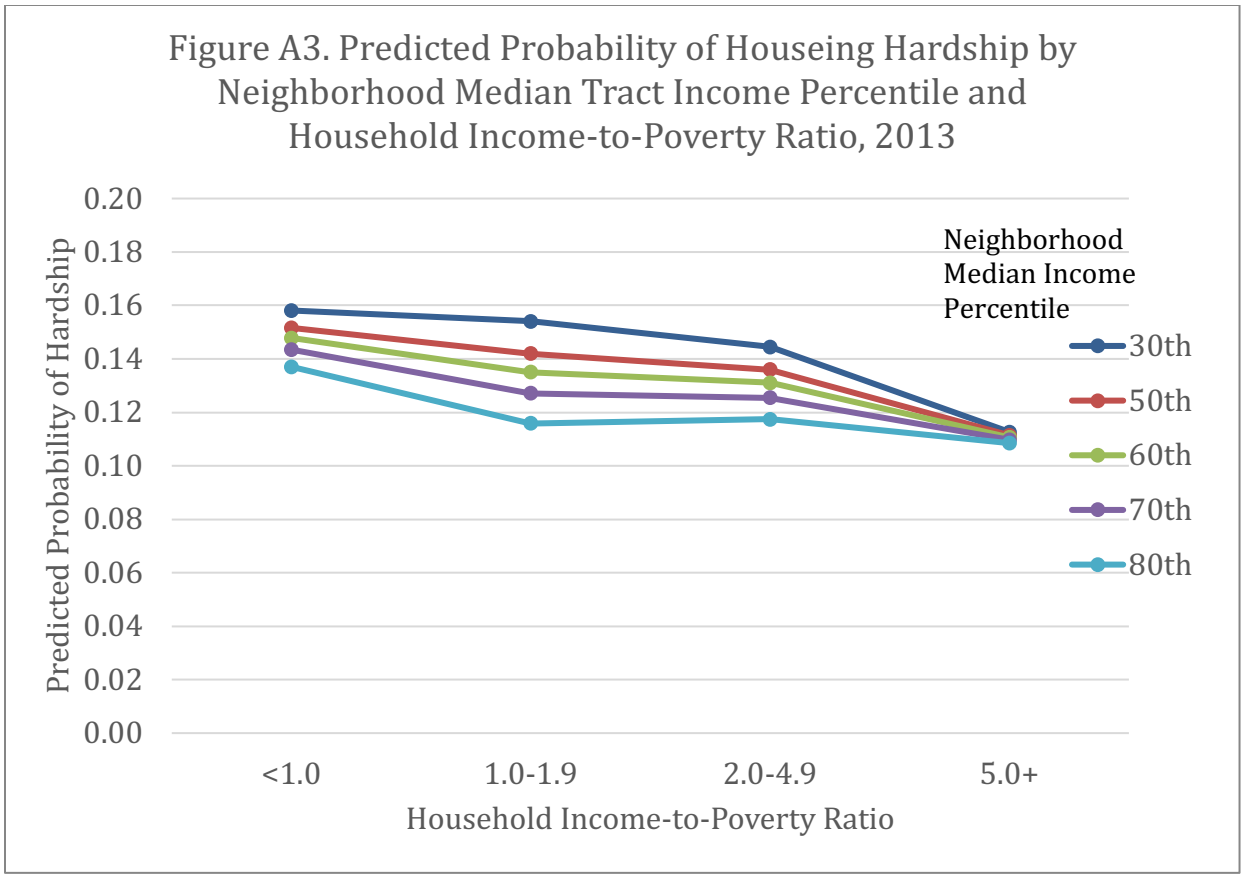
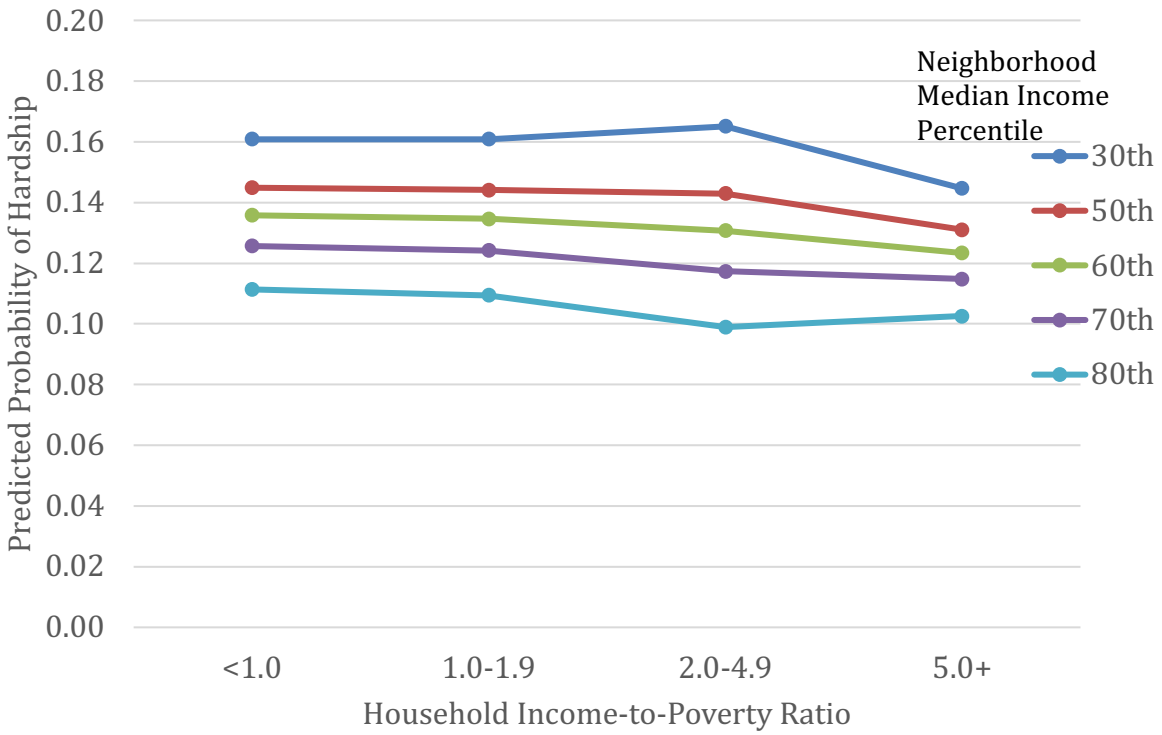


Figure A3. Predicted Probability of Houseing Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2013
Predicted Probability of Hardship
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
<1.0
1.0-1.9
2.0-4.9
5.0+
Household Income-to-Poverty Ratio
Neighborhood Median Income Percentile
30th
50th
60th
70th
80th

Figure A4. Predicted Probability of Neighborhood Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2013



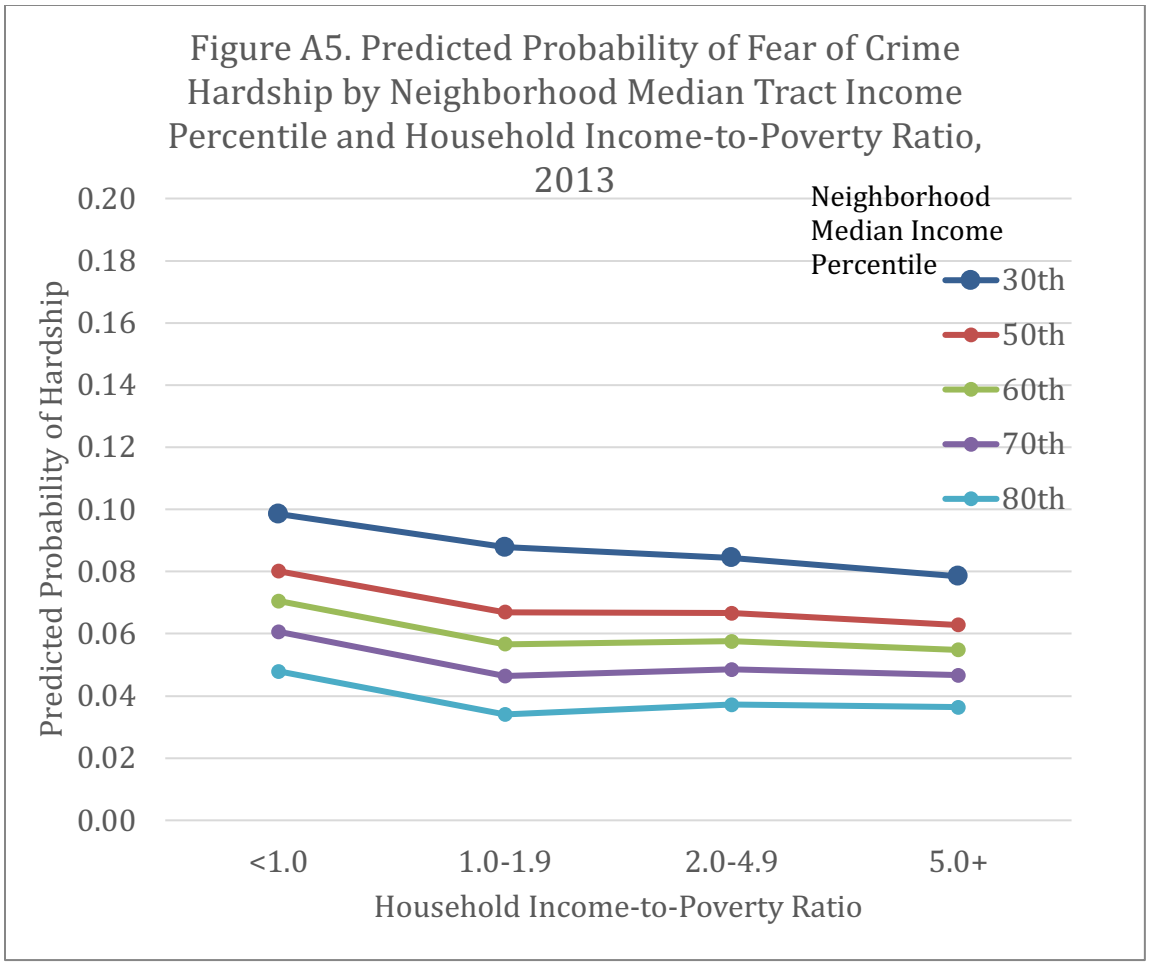


Figure A5. Predicted Probability of Fear of Crime Hardship by Neighborhood Median Tract Income Percentile and Household Income-to-Poverty Ratio, 2013
Predicted Probability of Hardship
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
<1.0
1.0-1.9
2.0-4.9
5.0+
Household Income-to-Poverty Ratio
Neighborhood Median Income Percentile
30th
50th
60th
70th
80th